

**REMARKS**

Applicants have carefully reviewed and considered the Office Action mailed on October 15, 2003, and the references cited therewith.

Claims 1 and 2 are amended; claims 3-11 are cancelled; claims 12-21 are added. As a result, claims 1, 2 and 12-21 are now pending in this application. Based upon the above changes to the claims and the following remarks, Applicants respectfully request reconsideration and withdrawal all outstanding objections and rejections.

The amendments to claims 1 and 2 are supported by the specification at page 9, line 20. The cancellation of claims 3-11 and the addition of claims 12-21 address the Examiner's objection to the multiply dependent claims. New claims 12 and 13 are supported by originally filed claim 3. New claims 14, 15, 16, 17, 18, and 19 are supported by originally filed claims 4, 5, 6, 7, 8, and 9, respectively. New claims 20 and 21 are supported by originally filed claims 11 and 10, respectively.

The amendments to the claims do not add new matter.

**I. The Objection under 37 C.F.R. §1.75(c)**

Claims 5-11 are objected to under 37 CFR §1.75(c) as being improper in form because a multiply dependent claim cannot depend from another multiply dependent claim. Applicants have amended the claims to remove the improper multiple dependencies and therefore, Applicants respectfully request the withdrawal of this objection.

**II. The Rejections under 35 U.S.C. §102**

Claims 1 and 2 were rejected under 35 U.S.C. §102(e) as being anticipated by Clark et al. (U.S. Patent No. 6403129), and under 35 U.S.C. §102(b) as being anticipated by either one of Alderton (U.S. Patent Nos. 3,454,406 and 3,328,178) or Ruas-Madiedo et al., Journal of Food Protection, 59:5, 502-508 (1996). These rejections are respectfully traversed.

The present invention provides a process to reduce or inhibit the growth of bacteria and other pathogens in a liquid, comprising adding CO<sub>2</sub> to the liquid, thermally inactivating the bacteria and other pathogens in the liquid, wherein the added CO<sub>2</sub> cooperates to increase the

efficacy of the thermal inactivation process, and removing the free CO<sub>2</sub> from the liquid upon completion of the thermal inactivation process.

The present invention further provides a process to enhance the efficacy of thermal inactivation of pathogens in a liquid, comprising adding CO<sub>2</sub> to the liquid, thermally processing the liquid, wherein the added CO<sub>2</sub> cooperates with the thermal inactivation process so that the death rate of bacteria and other pathogens in the liquid is increased over the death rate that occurs during thermal inactivation carried out in the absence of added CO<sub>2</sub>, and removing the free CO<sub>2</sub> from the liquid upon completion of the thermal inactivation process.

In order to anticipate a claim, “a reference must disclose every element of the challenged claim, and enable one skilled in the art to make the anticipating subject matter.” *PPG Industries Inc. v. Guardian Industries Corp.*, 75 F.3d 1558, 37 U.S.P.Q.2d 1618 (Fed. Cir. 1996). A single source must disclose all of the claimed elements “arranged as in the claim.” *Richardson v. Suzuki Motor Co.*, 868 F. 2d 1226, 1236, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). An assertion that the claimed invention was described in the prior art may be overcome by showing that the disclosure of the prior art reference cited as anticipating a claimed invention lacks the characteristics of the claimed invention. *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

Clark et al. disclose a beverage composition and method for making it. In Clark et al., CO<sub>2</sub> is added to the beverage after pasteurization, as a method of adjusting the pH (see col. 9, lines 22-30) and providing carbonization. Clark et al. specifically state that the beverage mixture is pasteurized after “all essential and optional ingredients” are added (see col. 9, lines 22-30). In contrast, Applicants’ claims recite processes to inhibit the growth of bacteria in a liquid and to enhance the efficacy of a thermal inactivation process of a liquid. Each of Applicants’ claimed processes involve adding CO<sub>2</sub> to the liquid prior to thermal inactivation, and then removing excess free CO<sub>2</sub> from the liquid after thermal inactivation. Clark et al. do not recite the addition of CO<sub>2</sub> to a liquid prior to thermal inactivation, and the removal of excess CO<sub>2</sub> after thermal inactivation. Consequently, the Clark et al. patent does not anticipate claims 1, 2 and 12-21. Therefore, withdrawal of the §102 rejection with respect to claims 1, 2 and 12-21 is appropriate, and is respectfully requested.

Ruas-Madiedo et al. disclose a method of extending the shelf life of raw milk by acidifying raw milk with CO<sub>2</sub> to lower the pH, allowing the milk to be stored for a period of time, degassing the milk to remove the CO<sub>2</sub>, and then pasteurizing the milk. Ruas-Madiedo et al. disclose that “removal of CO<sub>2</sub> prior to pasteurization would be essential,” (page 502, bottom of right column)(emphasis added). In contrast, Applicants’ claims recite processes to inhibit the growth of bacteria in a liquid and to enhance the efficacy of a thermal inactivation process of a liquid by adding CO<sub>2</sub> to the liquid, then subjecting the liquid to thermal inactivation and then removing excess free CO<sub>2</sub> from the liquid after thermal inactivation. Ruas-Madiedo et al. teach away from the presently claimed process because Ruas-Madiedo et al. disclose that it is essential to remove CO<sub>2</sub> prior to pasteurization. Therefore, Ruas-Madiedo et al. do not anticipate claims 1, 2 and 12-21. Thus, withdrawal of the §102 rejection with respect to claims 1, 2, and 12-21 is appropriate, and is respectfully requested.

Alderton (U.S. Pat. No. 3,328,178) (herein “Alderton ‘178”) discloses a method for sterilization. Alderton ‘178 does not disclose the use of CO<sub>2</sub> whatsoever. In contrast, the steps of the addition of CO<sub>2</sub> prior to thermal inactivation, and the removal of excess CO<sub>2</sub> after thermal inactivation are recited in Applicants’ claimed processes. Therefore, Alderton ‘178 does not anticipate claims 1, 2 and 12-21, and withdrawal of the §102 rejection with respect to claims 1, 2 and 12-21 is appropriate, and is respectfully requested.

Alderton (U.S. Pat. No. 3,454,406) (herein “Alderton ‘406”) discloses a process for sterilizing foods and other materials. The process for destroying spores in foods and other materials that is disclosed in Alderton ‘406 requires: 1) contacting the material with an acid to lower the pH to a range of 1.5-5, 2) partially neutralizing the material to bring the pH of the material close to its original pH, and then 3) sealing the container and subjecting the material to heat treatment. The limited neutralization in Alderton ‘406 is done by using a base followed by a sparge of CO<sub>2</sub>, or adding dry ice (solid CO<sub>2</sub>), or incorporation of CO<sub>2</sub> under pressure. The CO<sub>2</sub> treatment is disclosed to maintain the heat sensitivity of the spores that is caused by the essential pre-acidification step. (See Col. 4, lines 1-14). Alderton ‘406 does not disclose or suggest that a CO<sub>2</sub> treatment alone has any effect on the microorganisms.

In contrast, Applicants’ claims recite processes to inhibit the growth of bacteria in a liquid and to enhance the efficacy of a thermal inactivation process of a liquid by adding CO<sub>2</sub> to

the liquid, subjecting the liquid to thermal inactivation, and then removing excess CO<sub>2</sub> after thermal inactivation. Alderton '406 does not disclose that CO<sub>2</sub> cooperates with the thermal treatment to lead to enhanced killing of microbes. Alderton '406 also does not disclose the removal of excess free CO<sub>2</sub> from the liquid after thermal inactivation. Therefore, Alderton '406 does not anticipate claims 1, 2 and 12-21, and withdrawal of the §102 rejection with respect to claims 1, 2 and 12-21 is appropriate, and is respectfully requested.

Conclusion

Applicants respectfully submit that the claims are in condition for allowance and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicants' attorney ((612) 349-9580) to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743

Respectfully submitted,

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Date March 10, 2004

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 10<sup>th</sup> day of March, 2004.

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